Red Hat Storage 2.0
Quick Start Guide

Getting Started with Red Hat Enterprise Virtualization 3.1 and Red Hat Storage 2.0
Edition 1

Anjana Suparna Sriram Divya Muntimadugu

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Edition 1

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Abstract

This document is a step-by-step guide for first-time users to install and configure a basic Red Hat Enterprise Virtualization environment and enable Red Hat Storage for virtualization.

Table of Contents

Preface **3**
1. Audience 3
2. Document Conventions 3
2.1. Typographic Conventions 3
2.2. Pull-quote Conventions 4
2.3. Notes and Warnings 5
3. Getting Help and Giving Feedback 6
3.1. Do You Need Help? 6
3.2. We Need Feedback! 6

Chapter 1. Introduction to Red Hat Storage for Virtualization **7**
1.1. Architecture Overview 7
1.2. Prerequisites 8

Chapter 2. Enabling Red Hat Storage in Red Hat Enterprise Virtualization Manager . **11**

Chapter 3. Managing Virtual Machine Images on Red Hat Storage Servers **14**
3.1. Creating and Tuning Volumes for Virtualization 14
3.1.1. Tuning Volumes Using CLI 14
3.2. Adding POSIX Compliant File System Storage 15

Chapter 4. Creating and Tuning Volumes Using Red Hat Enterprise Virtualization Manager **21**

Revision History **27**

Preface

Red Hat Storage is a software only, scale-out storage solution that provides flexible and agile unstructured data storage for the enterprise. Red Hat Enterprise Virtualization uses a centralized shared storage system for virtual machine disk images and snapshots.

This guide enables you to install and configure Red Hat Enterprise Virtualization and create virtual machines using Red Hat Storage as storage domains.

1. Audience

This document is designed as a guide for system administrators to configure Red Hat Storage for Red Hat Enterprise Virtualization and create Red Hat Storage (volumes) as storage domains.

2. Document Conventions

This manual uses several conventions to highlight certain words and phrases and draw attention to specific pieces of information.

In PDF and paper editions, this manual uses typefaces drawn from the Liberation Fonts set. The Liberation Fonts set is also used in HTML editions if the set is installed on your system. If not, alternative but equivalent typefaces are displayed. Note: Red Hat Enterprise Linux 5 and later include the Liberation Fonts set by default.

2.1. Typographic Conventions

Four typographic conventions are used to call attention to specific words and phrases. These conventions, and the circumstances they apply to, are as follows.

`Mono-spaced Bold`

Used to highlight system input, including shell commands, file names and paths. Also used to highlight keys and key combinations. For example:

> To see the contents of the file **`my_next_bestselling_novel`** in your current working directory, enter the **`cat my_next_bestselling_novel`** command at the shell prompt and press **`Enter`** to execute the command.

The above includes a file name, a shell command and a key, all presented in mono-spaced bold and all distinguishable thanks to context.

Key combinations can be distinguished from an individual key by the plus sign that connects each part of a key combination. For example:

> Press **`Enter`** to execute the command.
>
> Press **`Ctrl`**+**`Alt`**+**`F2`** to switch to a virtual terminal.

The first example highlights a particular key to press. The second example highlights a key combination: a set of three keys pressed simultaneously.

If source code is discussed, class names, methods, functions, variable names and returned values mentioned within a paragraph will be presented as above, in **`mono-spaced bold`**. For example:

> File-related classes include **`filesystem`** for file systems, **`file`** for files, and **`dir`** for

directories. Each class has its own associated set of permissions.

Proportional Bold

This denotes words or phrases encountered on a system, including application names; dialog box text; labeled buttons; check-box and radio button labels; menu titles and sub-menu titles. For example:

> Choose **System** → **Preferences** → **Mouse** from the main menu bar to launch **Mouse Preferences**. In the **Buttons** tab, select the **Left-handed mouse** check box and click **Close** to switch the primary mouse button from the left to the right (making the mouse suitable for use in the left hand).
>
> To insert a special character into a **gedit** file, choose **Applications** → **Accessories** → **Character Map** from the main menu bar. Next, choose **Search** → **Find...** from the **Character Map** menu bar, type the name of the character in the **Search** field and click **Next**. The character you sought will be highlighted in the **Character Table**. Double-click this highlighted character to place it in the **Text to copy** field and then click the **Copy** button. Now switch back to your document and choose **Edit** → **Paste** from the **gedit** menu bar.

The above text includes application names; system-wide menu names and items; application-specific menu names; and buttons and text found within a GUI interface, all presented in proportional bold and all distinguishable by context.

Mono-spaced Bold Italic or ***Proportional Bold Italic***

Whether mono-spaced bold or proportional bold, the addition of italics indicates replaceable or variable text. Italics denotes text you do not input literally or displayed text that changes depending on circumstance. For example:

> To connect to a remote machine using ssh, type **ssh *username*@*domain.name*** at a shell prompt. If the remote machine is **example.com** and your username on that machine is john, type **ssh john@example.com**.
>
> The **mount -o remount *file-system*** command remounts the named file system. For example, to remount the **/home** file system, the command is **mount -o remount /home**.
>
> To see the version of a currently installed package, use the **rpm -q *package*** command. It will return a result as follows: ***package-version-release***.

Note the words in bold italics above — username, domain.name, file-system, package, version and release. Each word is a placeholder, either for text you enter when issuing a command or for text displayed by the system.

Aside from standard usage for presenting the title of a work, italics denotes the first use of a new and important term. For example:

> Publican is a *DocBook* publishing system.

2.2. Pull-quote Conventions

Terminal output and source code listings are set off visually from the surrounding text.

Output sent to a terminal is set in **mono-spaced roman** and presented thus:

```
books        Desktop   documentation  drafts  mss    photos   stuff  svn
books_tests  Desktop1  downloads      images  notes  scripts  svgs
```

Source-code listings are also set in **mono-spaced roman** but add syntax highlighting as follows:

```
static int kvm_vm_ioctl_deassign_device(struct kvm *kvm,
                 struct kvm_assigned_pci_dev *assigned_dev)
{
         int r = 0;
         struct kvm_assigned_dev_kernel *match;

         mutex_lock(&kvm->lock);

         match = kvm_find_assigned_dev(&kvm->arch.assigned_dev_head,
                                       assigned_dev->assigned_dev_id);
         if (!match) {
                 printk(KERN_INFO "%s: device hasn't been assigned before, "
                   "so cannot be deassigned\n", __func__);
                 r = -EINVAL;
                 goto out;
         }

         kvm_deassign_device(kvm, match);

         kvm_free_assigned_device(kvm, match);

out:
         mutex_unlock(&kvm->lock);
         return r;
}
```

2.3. Notes and Warnings

Finally, we use three visual styles to draw attention to information that might otherwise be overlooked.

Note

Notes are tips, shortcuts or alternative approaches to the task at hand. Ignoring a note should have no negative consequences, but you might miss out on a trick that makes your life easier.

Important

Important boxes detail things that are easily missed: configuration changes that only apply to the current session, or services that need restarting before an update will apply. Ignoring a box labeled 'Important' will not cause data loss but may cause irritation and frustration.

Warning

Warnings should not be ignored. Ignoring warnings will most likely cause data loss.

3. Getting Help and Giving Feedback

3.1. Do You Need Help?

If you experience difficulty with a procedure described in this documentation, visit the Red Hat Customer Portal at http://access.redhat.com. Through the customer portal, you can:

- search or browse through a knowledgebase of technical support articles about Red Hat products.
- submit a support case to Red Hat Global Support Services (GSS).
- access other product documentation.

Red Hat also hosts a large number of electronic mailing lists for discussion of Red Hat software and technology. You can find a list of publicly available mailing lists at https://www.redhat.com/mailman/listinfo. Click on the name of any mailing list to subscribe to that list or to access the list archives.

3.2. We Need Feedback!

If you find a typographical error in this manual, or if you have thought of a way to make this manual better, we would love to hear from you! Please submit a report in Bugzilla: http://bugzilla.redhat.com/ against the product **Red Hat Storage.**

When submitting a bug report, be sure to mention the manual's identifier: *Quick_Start_Guide*

If you have a suggestion for improving the documentation, try to be as specific as possible when describing it. If you have found an error, please include the section number and some of the surrounding text so we can find it easily.

Chapter 1. Introduction to Red Hat Storage for Virtualization

Red Hat Storage provides a POSIX compatible file system that allows you to store virtual machine images in a Red Hat Storage Server cluster instead of network-attached storage (NAS) appliances or a storage area network (SAN) array.

Red Hat provides a way to create and optimize Red Hat Storage volumes using the Red Hat Enterprise Virtualization Manager. Red Hat Enterprise Virtualization platform and Red Hat Storage platform comprise of various components which work seamlessly together, enabling system administrators to install, configure, and manage a virtualized environment using Red Hat Storage as the virtual machine image store.

1.1. Architecture Overview

Red Hat Enterprise Virtualization 3.1 and later versions support the use of POSIX compliant file systems for storage. Red Hat Storage provides a POSIX compatible file system in which you can create Red Hat Storage volumes as storage domains.

Red Hat Enterprise Virtualization and Red Hat Storage integration consists of:

- Red Hat Enterprise Virtualization environment.

  Refer to the Red Hat Enterprise Virtualization Architecture in *Chapter 1, Introduction* of *Red Hat Enterprise Virtualization Installation Guide*.
- Red Hat Storage environment.

  Red Hat Storage environment consists of bricks that are used to build volumes. Different types of optimized storage volumes can be used as virtual machine store to hold resources like virtual disks, templates, snapshots.

The following diagram illustrates Red Hat Enterprise Virtualization integration with Red Hat Storage 2.0:

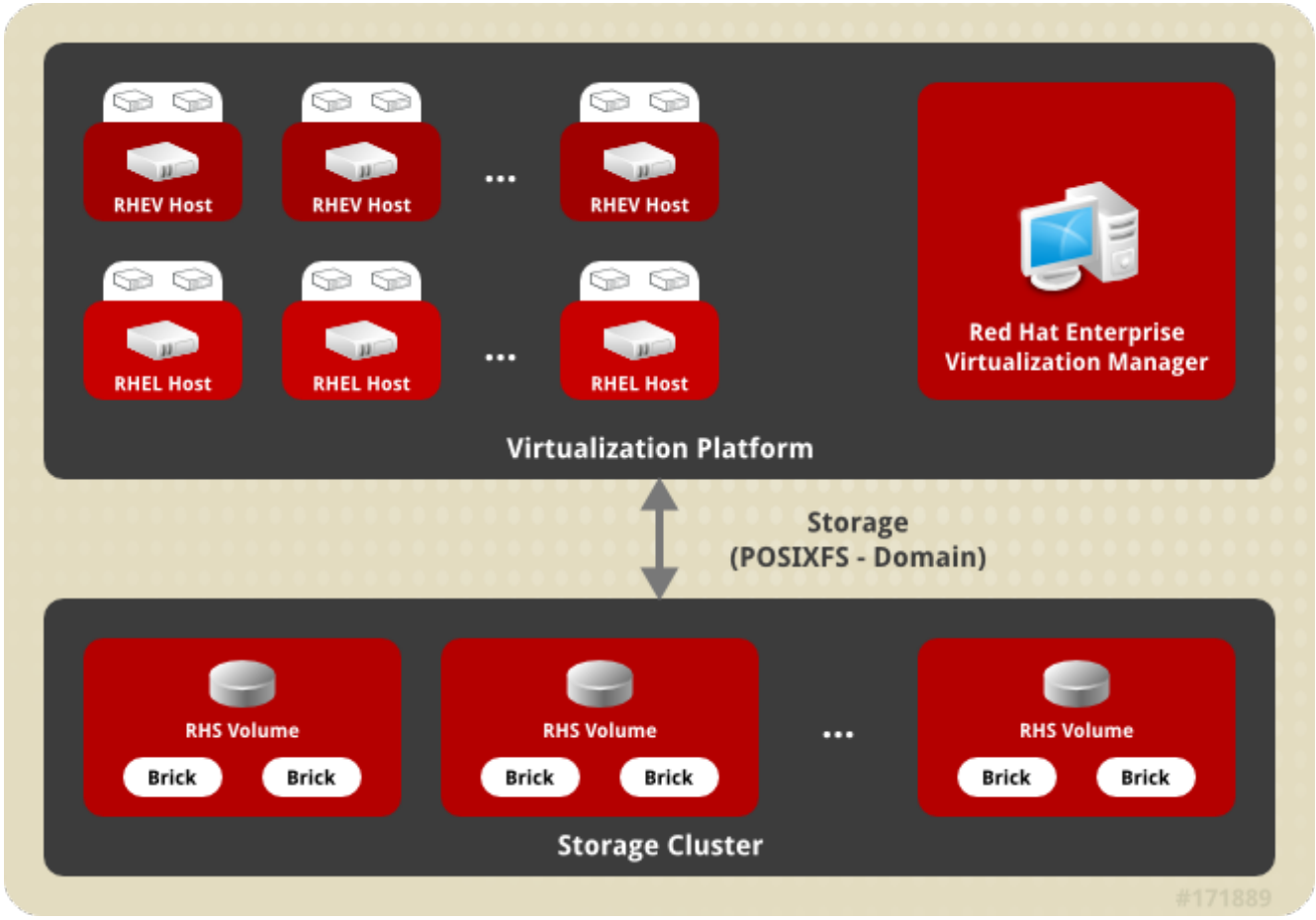

Figure 1.1. Integration Architecture

1.2. Prerequisites

In order to install and integrate Red Hat Storage with Red Hat Enterprise Virtulaization, you must have the following requirements listed in this section on your computer.

1. **Updating Red Hat Storage 2.0**

   If your environment is already on Red Hat Storage 2.0, ensure that your system is up-to-date with the latest patches and upgrades. To install software updates, use the following command:

   ```
   # yum update
   ```

2. **Download the ISO**.

   You must download ISO that holds the installation sources before you start the installation to your local computer and proceed from there.

   After downloading the ISO images, check the MD5 checksums for the ISO images to ensure that the download was successful.

   If you have a subscription or evaluation subscription, follow these steps to obtain the Red Hat Storage ISO image files:

   a. Visit the customer portal at https://access.redhat.com/login and enter your Login and Password.

   b. Click **Downloads** to visit the Software & Download Center.

c. In the Red Hat Storage Server area, click the **Download**.

d. In Download Software, click **Red Hat Enterprise Linux EUS Server (v. 6.2.z for 64-bit x86_64)**and then click **Red Hat Storage Server 2.0 (RHEL 6.2.z for x86_64)**. Expand the node to download the following software:

- **RHS 2.0 Update 4 Installation DVD**

or visit the following link to obtain the software https://rhn.redhat.com/rhn/software/channel/downloads/Download.do?cid=14689.

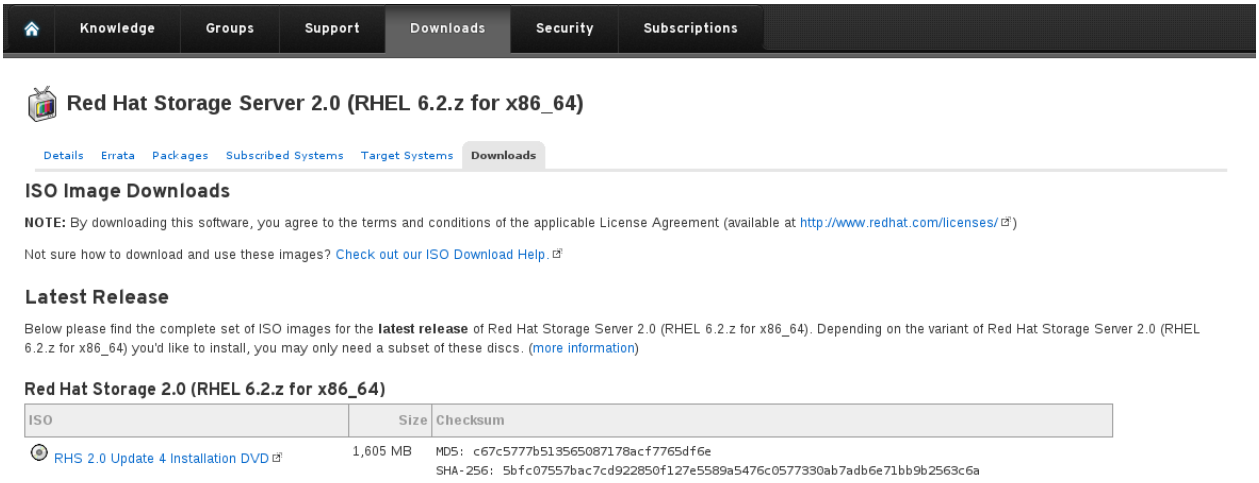
Knowledge
Groups
Support
Downloads
Security
Subscriptions
Red Hat Storage Server 2.0 (RHEL 6.2.z for x86_64)
Details
Errata
Packages
Subscribed Systems
Target Systems
Downloads
ISO Image Downloads
NOTE: By downloading this software, you agree to the terms and conditions of the applicable License Agreement (available at http://www.redhat.com/licenses/)
Not sure how to download and use these images? Check out our ISO Download Help.
Latest Release
Below please find the complete set of ISO images for the latest release of Red Hat Storage Server 2.0 (RHEL 6.2.z for x86_64). Depending on the variant of Red Hat Storage Server 2.0 (RHEL 6.2.z for x86_64) you'd like to install, you may only need a subset of these discs. (more information)
Red Hat Storage 2.0 (RHEL 6.2.z for x86_64)
ISO
Size
Checksum
RHS 2.0 Update 4 Installation DVD
1,605 MB
MD5: c67c5777b513565087178acf7765df6e
SHA-256: 5bfc07557bac7cd922850f127e5589a5476c0577330ab7adb6e71bb9b2563c6a

Figure 1.2. A system configured for RHN installation of Red Hat Storage 2.0

3. **Check System requirements**.

   You must ensure to meet the requirements to ensure smooth integration of Red Hat Enterprise Virtualization and Red Hat Storage. Refer to *Chapter 2, System Requirements* of *Red Hat Enterprise Virtualization 3.1 Installation Guide* which outlines the minimum system requirements required to install, configure, and operate a Red Hat Enterprise Virtualization environment. Also, refer to the hardware compatibility matrix and system requirements outlined in *Chapter 3. Planning Red Hat Storage Installation* of *Red Hat Storage 2.0 Installation Guide*.

   While creating a data center in Red Hat Enterprise Virtualization Manager, ensure that you choose compatibility version 3.1.

4. **Subscribing to the Red Hat Enterprise Virtualization Channels**.

   Subscribe to Red Hat Enterprise Virt Management Agent channel on all Red Hat Enterprise Linux 6.3 and Red Hat Enterprise Linux 6.4 hypervisors which now acts as the client for your Red Hat Storage volumes.

5. **Subscribing to Red Hat Storage Native Client channel**.

   You must ensure to subscribe all Red Hat Enterprise Linux 6.3 and Red Hat Enterprise Linux 6.4 hypervisors to the Red Hat Storage Native Client channel to get the latest version.

6. **Set fully qualified domain name for each hypervisors**.

   Correct DNS records must exist for each hypervisors and Red Hat Storage server nodes. A fully qualified domain name must be resolvable via both forward and reverse DNS lookup.

7. **Set SELinux booleans**.

   If you are using QEMU/KVM as hypervisor, ensure to set the following SELinux booleans:

```
# setsebool -P sanlock_use_fusefs on
# setsebool -P virt_use_sanlock on
# setsebool -P virt_use_fusefs on
```

Completion of the above prerequisites will enable the system to start the installation. Before you start installing Red Hat Storage 2.0 for Virtualization, you must have downloaded the following software from the Red Hat Customer Portal:

- Red Hat Enterprise Virtualization 3.1
- Red Hat Storage 2.0 Update 4 ISO.
- Subscribe Red Hat Enterprise Linux hosts with Red Hat Storage 2.0 Native Client channels.
  - Red Hat Enterprise Linux 6.3 and Red Hat Enterprise Linux 6.4

    Red Hat Enterprise Linux hosts must be registered and subscribed to a number of entitlements using either Subscription Manager or Red Hat Network Classic. For more information, refer to *Section 9.3.2. Subscribing to Required Channels using RHN Classic* in *Chapter 9. Installing Red Hat Enterprise Linux Hosts* of *Red Hat Enterprise Virtualization Installation Guide*.
    - rhel-x86_64-server-6
    - rhel-x86_64-rhev-mgmt-agent-6

    Apart from the above channels, you must also subscribe to the Red Hat Storage 2.0 Native Client channels to get the latest version:
    - rhel-x86_64-server-rhsclient-6

      Refer to section *9.1.1. Installing Native Client* of *Red Hat Storage 2.0 Administration Guide* for information on how to install native clients.

Chapter 2. Enabling Red Hat Storage in Red Hat Enterprise Virtualization Manager

The Red Hat Enterprise Virtualization platform is a richly featured virtualization management solution providing fully integrated management across virtual machines.

Red Hat Enterprise Virtualization supports Red Hat Storage (volumes) as storage domains. To enable Red Hat Storage volumes in Red Hat Enterprise Virtualization Manager requires installation and configuration of several components to create a functioning virtualization environment. You must install and configure each component in the order shown in this checklist:

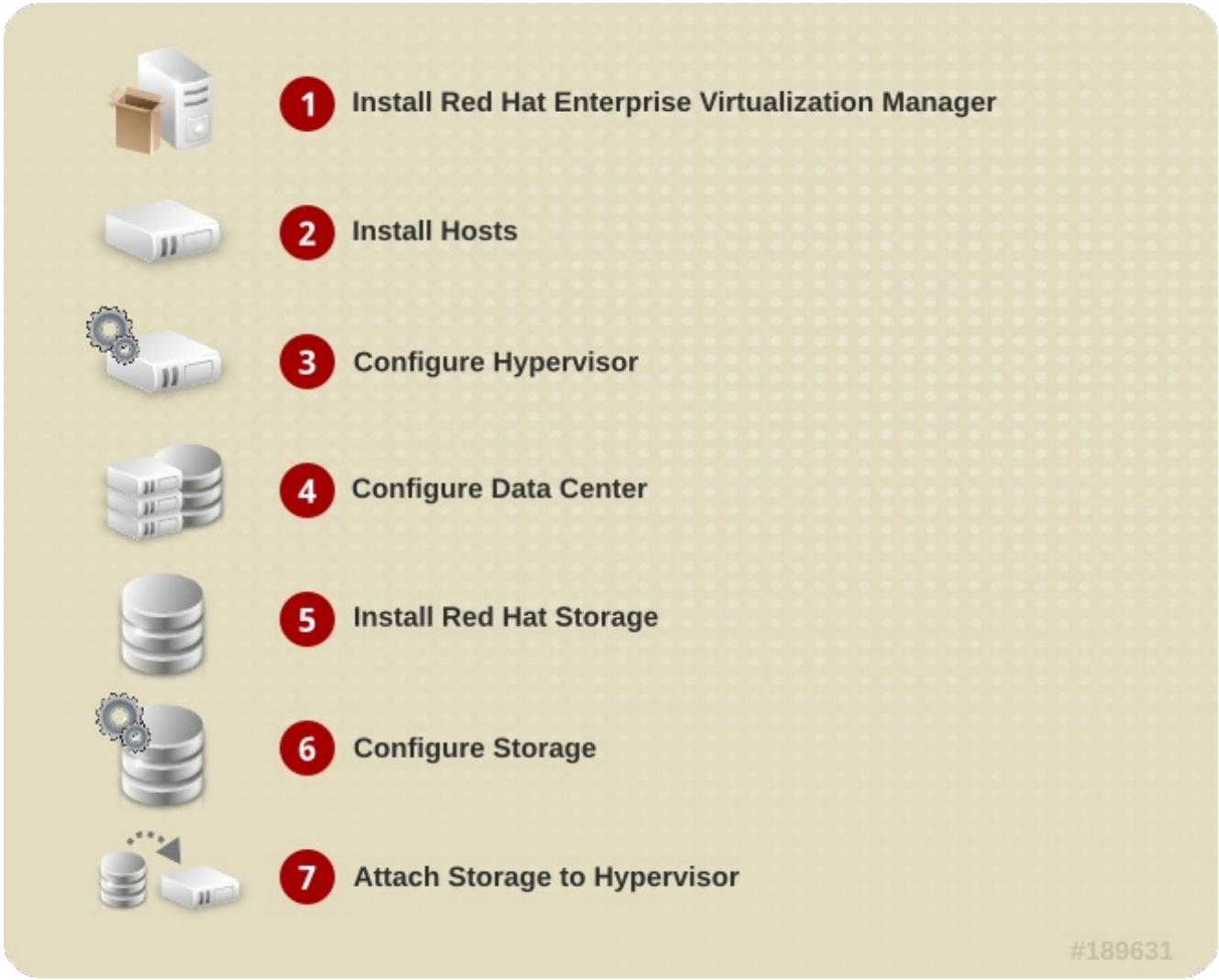

Figure 2.1. Installation Workflow

To enable Red Hat Storage in Red Hat Enterprise Virtualization Manager:

1. **Install Red Hat Enterprise Virtualization Manager.**

   The Red Hat Enterprise Virtualization Manager is the control center of the Red Hat Enterprise Virtualization environment. Ensure that Red Hat Enterprise Virtualization Manger 3.1 is installed and configured.

   Refer to *Chapter 3, Manager Installation* of *Red Hat Enterprise Virtualization Installation Guide* for more information on installing Red Hat Enterprise Virtualization Manger.
2. **Install Hosts.**

After you have installed the Red Hat Enterprise Virtualization Manager, it is time to install the hosts, which run your virtual machines. In Red Hat Enterprise Virtualization, you can use either Red Hat Enterprise Virtualization Hypervisor or Red Hat Enterprise Linux as hosts.

Prior to installing virtualization hosts you should ensure that:

- all virtualization hosts meet the hardware requirements, and
- you have successfully completed installation of the Red Hat Enterprise Virtualization Manager.

You can use the following hypervisors as hosts:

- Red Hat Enterprise Virtualization 3.1
- Red Hat Enterprise Linux 6.3, or
- Red Hat Enterprise Linux 6.4

During installation, remember to set the fully qualified domain name (FQDN) and IP address for the server in order to avoid network conflicts.

Refer *Chapter 8. Installing Red Hat Enterprise Virtualization Hypervisor Hosts* of *Red Hat Enterprise Virtualization Installation Guide* for information on installing the hypervisor.

You must install Red Hat Enterprise Linux 6.3 or Red Hat Enterprise Linux 6.4 Server on a system to use it as a virtualization host in a Red Hat Enterprise Virtualization environment. Refer *Chapter 9. Installing Red Hat Enterprise Linux Hosts* of *Red Hat Enterprise Virtualization Installation Guide* or *Red Hat Enterprise Linux 6 Installation Guide* for detailed instructions.

3. **Configure the Hypervisor**.

   a. Configuring a Red Hat Enterprise Virtualization Hypervisor host.

      Install **RHEV-H 3.1** on bare metal.

      Refer to *Section 8.5. Configuring the Hypervisor* and *Section 8.6. Attaching the Hypervisor to the Red Hat Enterprise Virtualization Manager* in *Chapter 8, Installing the Red Hat Enterprise Virtualization Hypervisor* of *Red Hat Enterprise Virtualization Installation Guide* for more information on configuring the Red Hat Enterprise Virtualization hypervisor host.

   b. Configuring a Red Hat Enterprise Linux 6.3 or Red Hat Enterprise Linux 6.4 host.

      To be used as a virtualization host, a Red Hat Enterprise Linux host must be registered and subscribed to a number of entitlements using either Subscription Manager or Red Hat Network Classic.

      For more information, refer to *Section 9.3.2. Subscribing to Required Channels using RHN Classic* in *Chapter 9. Installing Red Hat Enterprise Linux Hosts* of *Red Hat Enterprise Virtualization Installation Guide*.

      You must ensure to subscribe to the Red Hat Storage Native Client from the Additional Services Channels to ensure the server has the latest clients installed by running the following command:

      ```
      #yum install glusterfs-fuse glusterfs
      ```

      For information on how to install native clients, refer to section *9.1.1. Installing Native Client* of *Red Hat Storage 2.0 Administration Guide*.

4. **Configure Data Centers**.

   A data center is a logical entity that defines the set of physical and logical resources used in a managed virtual environment.

   Following Red Hat Enterprise Virtualization Manager installation, you must define the data centers and clusters that you will use to organize your virtualization hosts. The installation process creates a data center and associated cluster, called **Default**.

Note

A server can be a Red Hat Enterprise Virtualization Hypervisor or a Red Hat Enterprise Linux host. A trusted storage pool needs a minimum of one storage host, and at least one active virtualization host is required to connect the system to a storage pool.

5. **Install Red Hat Storage**.

   Download and install **`RHS 2.0 Update 4 Installation DVD`** on bare metal.

   Refer to Section 1.2, “Prerequisites ” for more information on obtaining the software.

   For information on installing Red Hat Storage from an ISO, refer to *Chapter 4, Installing Red Hat Storage* of *Red Hat Storage Installation Guide*.

6. **Configure Storage.**

   Red Hat Enterprise Virtualization uses a centralized storage system for virtual machine disk images. Before adding storage ensure that you have a working Red Hat Enterprise Virtualization Manager environment. You must be able to successfully access the Administration Portal, and there must be at least one host connected with a status of **Up**.

7. **Attach Storage to Hypervisor.**

   Attach Red Hat Storage volume as storage domain. To attach and manage Red Hat Storage volume as storage domain, refer to Section 3.2, “Adding POSIX Compliant File System Storage”.

Completion of the above steps will result in the creation of a functioning Red Hat Enterprise Virtualization environment capable of running virtual machines on Red Hat Storage cluster.

Chapter 3. Managing Virtual Machine Images on Red Hat Storage Servers

Red Hat Storage provides a POSIX compatible file system to store virtual machine images in Red Hat Storage volumes.

This chapter describes how you can create and tune volumes using the command line interface and also describes how you can prepare Red Hat Storage Servers for virtualization using Red Hat Enterprise Virtualization Manager.

3.1. Creating and Tuning Volumes for Virtualization

You must create Red Hat Storage volumes and tune those volumes to store virtual machine images. You can create and tune volumes using the command line interface.

Note

Red Hat recommends that you do not create gluster volumes using both CLI and Red Hat Enterprise Virtualization Manager in the same cluster.

3.1.1. Tuning Volumes Using CLI

Red Hat recommends to tune the volumes before starting the volume. For information on creating volumes, refer to *Chapter 8. Setting up Red Hat Storage Volumes* of *Red Hat Storage 2.0 Administration Guide*.

Tune the Red Hat Storage volume using the following command:

```
# gluster volume set VOLNAME group virt
```

Important

After the volume is tagged using **`group virt`** command, you must not use the volume for any other storage purpose, other than to store virtual machine images. Also, ensure to access the volume only through gluster native client.

This tuning command sets the options on the volume listed as key value pairs in **`/var/lib/glusterd/groups/virt`** file.

The following are the default and recommended key value pairs (**`volume set`** options) of the group name file located at **`/var/lib/glusterd/groups/virt`**:

```
quick-read=off
read-ahead=off
io-cache=off
stat-prefetch=off
eager-lock=enable
remote-dio=on
```

For more information on each **`volume set`** tunable option, refer to *Chapter 10. Managing Red Hat*

Storage Volumes of *Red Hat Storage 2.0 Administration Guide*.

Important

In Red Hat Enterprise Virtualization, you must ensure to set the brick permissions for **vdsm** and **kvm**. If you do not set the required brick permissions, creation of virtual machines fails. Assuming ***vol1*** is the volume to be exported as a storage domain from Red Hat Enterprise Virtualization, use the following commands to change the permissions of the bricks in ***vol1***:

```
# gluster volume set vol1 storage.owner-uid 36
# gluster volume set vol1 storage.owner-gid 36
```

If you are using QEMU/KVM as a hypervisor, ensure to set the brick permissions for QEMU user by setting **storage.owner-uid** and **storage.owner-gid** to 107. After you set the required permissions, you must restart the volume.

3.2. Adding POSIX Compliant File System Storage

To ensure a smooth and successful integration of Red Hat Storage servers and Red Hat Enterprise Virtualization platform, add your server carefully in order to the instructions described in this section. You can add Red Hat Storage servers for virtualization using the command line interface or Red Hat Enterprise Virtualization Manager.

Note

Red Hat recommends that you use separate data center for Red Hat Storage nodes.

To add Red Hat Storage server for virtualization using Red Hat Enterprise Virtualization Manager:

1. Create a Data center.
    a. Select the **Data Centers** resource tab to list all data centers in the results list.
    b. Click the **New** button to open the New Data Center window.

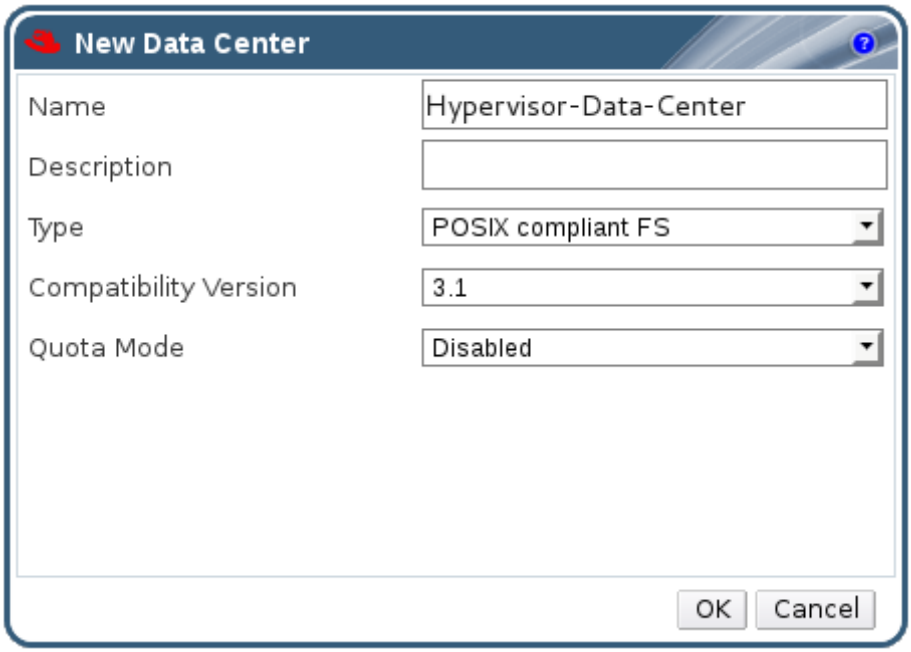

Figure 3.1. New Data Center window

c. Enter the **Name** and **Description** of the data center.

d. Select the storage **Type** as **POSIX compliant FS** from the drop-down menu.

Ensure to choose **Quota Mode** as **Disabled**.

e. Click OK.

The new data center is added to the virtualization environment. It will remain **Uninitialized** until a cluster, host, and storage is configured.

2. Create a cluster.

Red Hat Enterprise Virtualization 3.1 supports the use of clusters to manage Red Hat Storage volumes, in addition to virtualization hosts.

a. Select the **Clusters** resource tab to list all clusters in the results list.

b. Click **New** to open the New Cluster window.

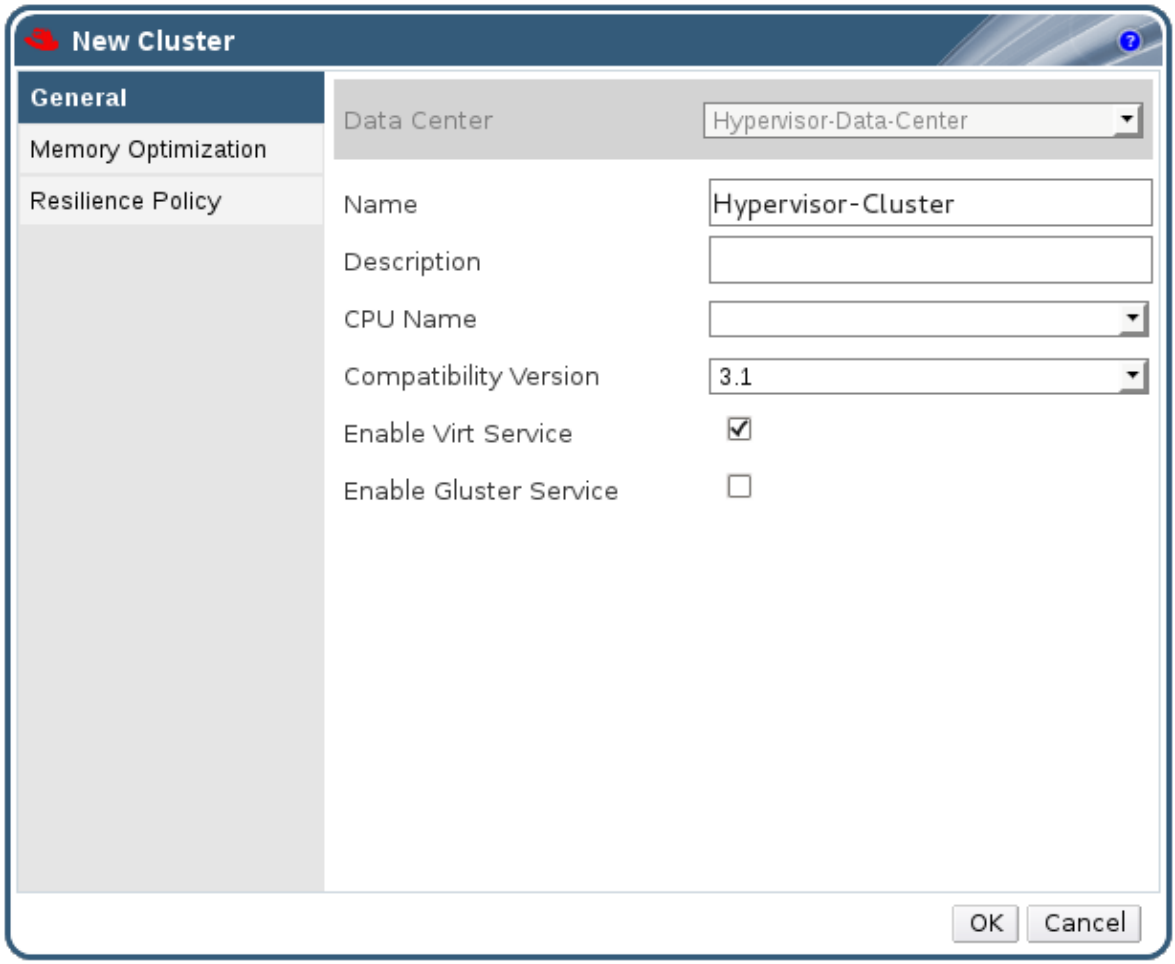

Figure 3.2. New Cluster window

c. Select the **Data Center** the cluster will belong to from the drop-down menu.
d. Enter the **Name** and **Description** of the cluster.
e. Select the **CPU Name** and **Compatibility Version** from the drop-down menus.
f. By default, the **Enable Virt Service** option is selected.
g. Click OK.

The new cluster is added to the virtualization environment.

3. Add Hosts.
   a. Click the **Hosts** tab.
      The Hosts tab displays a list of all hosts in the system.
   b. Click the **New** button.
      The **New Host** window displays.

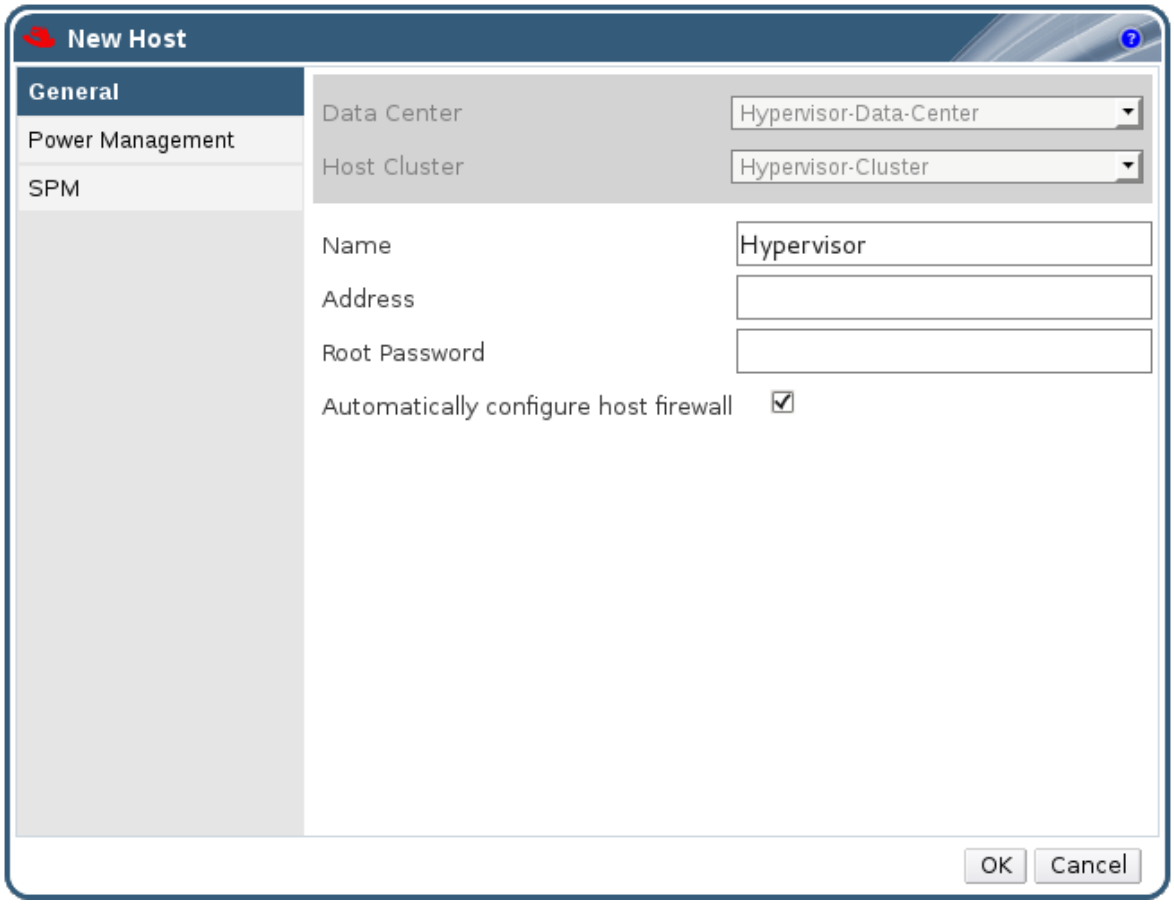

Figure 3.3. New Host window

Important

Red Hat Enterprise Linux hypervisor and Red Hat Enterprise Virtualization hypervisor on a single VDSM cluster accessing the same virtual machine image store is not supported.

c. Use the drop-down menus to select the **Data Center** and **Host Cluster** for the new host.

d. Enter the **Name**, **Address**, and **Root Password** of the new hypervisor host.

e. If applicable, clear the **Automatically configure host firewall** check box.

f. Click **OK** when you've entered all the necessary configuration details of your host.

The new host displays in the list of hypervisor hosts with a status of **Installing**. Once installation is complete, the status will update to **Reboot**. The host is activated and the status changes to **Up** automatically after **Reboot**.

4. Create and tune volumes using the command line interface.

Use the command line interface to create and tune volumes on the Red Hat Storage cluster. For information on creating and tuning volumes, refer to *Chapter 8. Setting up Red Hat Storage Volumes* of *Red Hat Storage 2.0 Administration Guide* and Section 3.1.1, “Tuning Volumes Using CLI”.

5. Using Red Hat Enterprise Virtualization Manager, add Storage Domain.

a. Click the **Storage** tab to list the existing storage domains in the results list.

b. Click the **New Domain** to open the New Domain window.

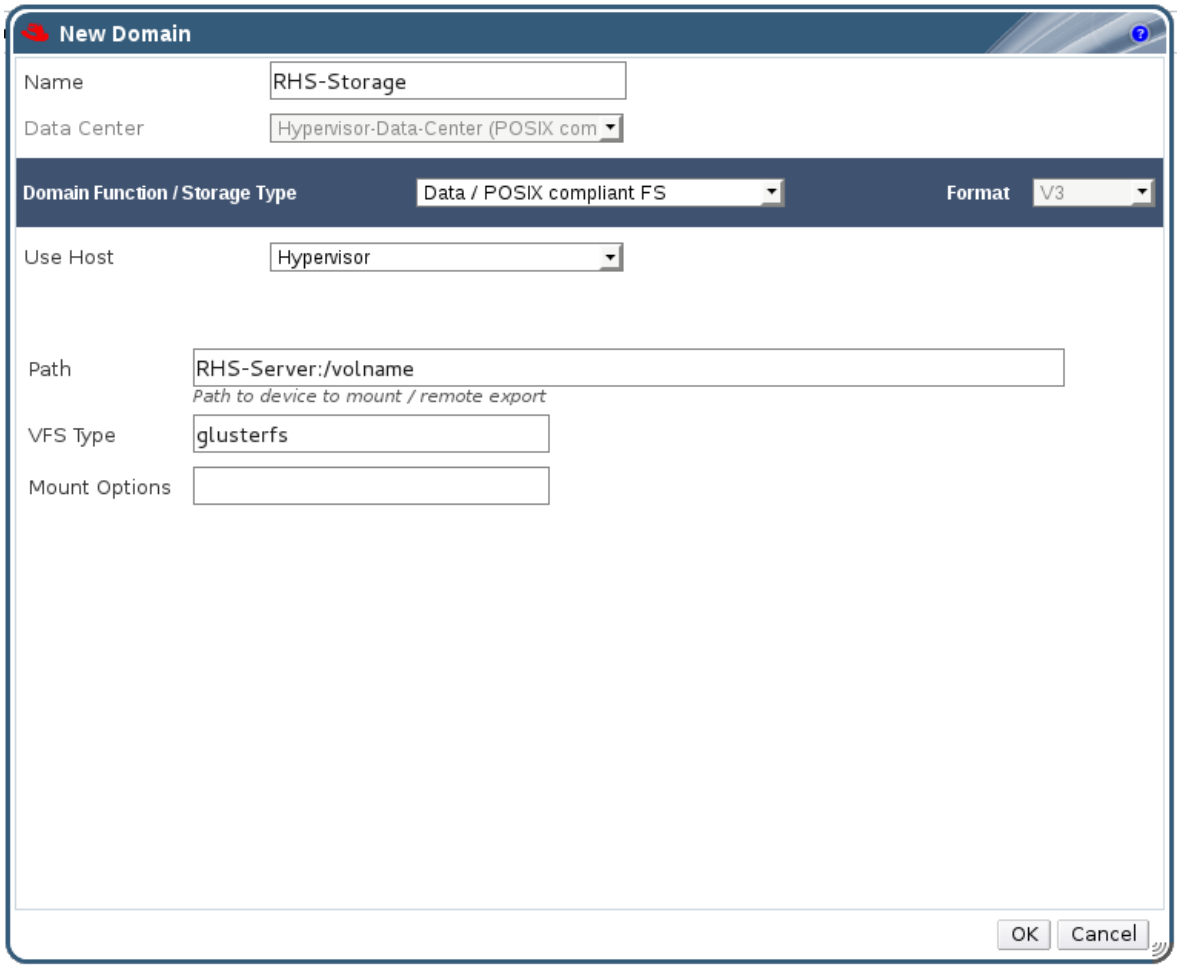

Figure 3.4. New Domain Window

c. Enter the **Name** for the storage domain.

d. Select the **Data Center** to be associated with the storage domain.

The data center selected must be of type **POSIX compliant FS**.

e. Select **Data/POSIX compliant FS** from the **Domain Function/Storage Type** drop-down menu.

f. Select a host from the **Use Host** drop-down menu.

g. Enter the **Path** of any one of the Red Hat Storage servers in the cluster.

```
RHS-Server:/volname
```

h. Enter **glusterfs** as **VFS Type**.

i. Enter the applicable Red Hat Storage native client mount options.

You can enter multiple mount options separated only by commas. For more information on native client mount options, refer to *Chapter 9. Accessing Data - Setting up Clients* of *Red Hat Storage 2.0 Administration Guide*.

j. Click **OK** to create the new Red Hat Storage domain.

k. Activate your new Red Hat Storage domain.

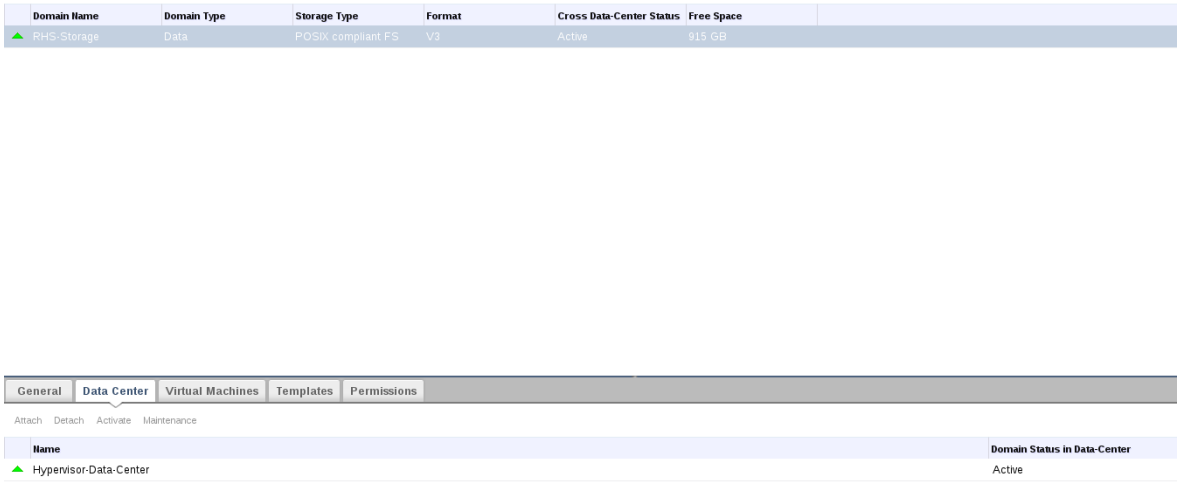

Figure 3.5. Activated Red Hat Storage Domain

You have successfully added Red Hat Storage domain to the data center.

You can create virtual machines using Red Hat Storage as storage domains. For more information on creating virtual machines, refer to *Chapter 8. Virtual Machines* of *Red Hat Enterprise Virtualization 3.1 Administration Guide*.

Chapter 4. Creating and Tuning Volumes Using Red Hat Enterprise Virtualization Manager

You can create and tune Red Hat Storage volumes using the Red Hat Enterprise Virtualization Manager 3.1 and later versions by creating a cluster with **Enable Gluster Service** option selected.

A volume is a logical collection of bricks where each brick is an export directory on a server in the trusted storage pool. Most of the management operations of Red Hat Storage happen on the volume. You can use the Red Hat Enterprise Virtualization Manager 3.1 to create and start new volumes featuring a single global namespace.

Important

Enable Gluster Service is a technology preview feature. Technology Preview features are not fully supported under Red Hat subscription level agreements (SLAs), may not be functionally complete, and are not intended for production use. However, these features provide early access to upcoming product innovations, enabling customers to test functionality and provide feedback during the development process. As Red Hat considers making future iterations of Technology Preview features generally available, we will provide commercially reasonable efforts to resolve any reported issues that customers experience when using these features.

Note

With the exception of volume operations described in this section, all other Red Hat Storage functionality must be executed from the command line.

To create and tune volumes using the Red Hat Enterprise Virtualization Manager:

1. Create a Data center.
    a. Select the **Data Centers** resource tab to list all data centers in the results list.
    b. Click the **New** button to open the **New Data Center** window.

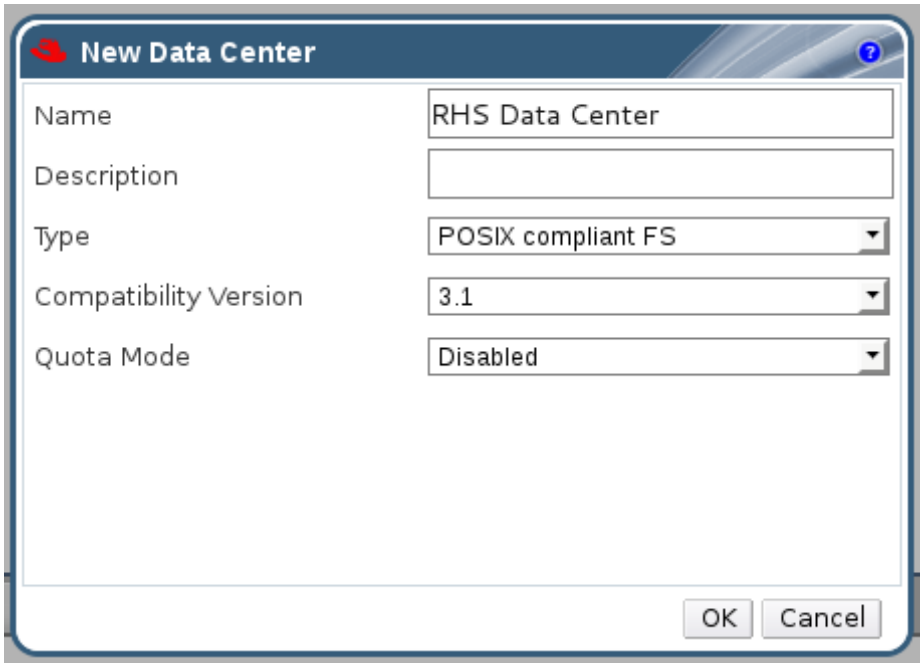

Figure 4.1. New Data Center window

c. Enter the **Name** and **Description** of the data center.

d. Select the storage **Type** as **POSIX compliant FS** from the drop-down menu.

Ensure to choose **Quota Mode** as **Disabled**.

e. Click OK.

The new data center is added to the virtualization environment. It will remain **Uninitialized** until a cluster, host, and storage is configured.

2. Create a gluster service enabled cluster.

For more information on creating a cluster, refer Step 2 of Section 3.2, “Adding POSIX Compliant File System Storage”

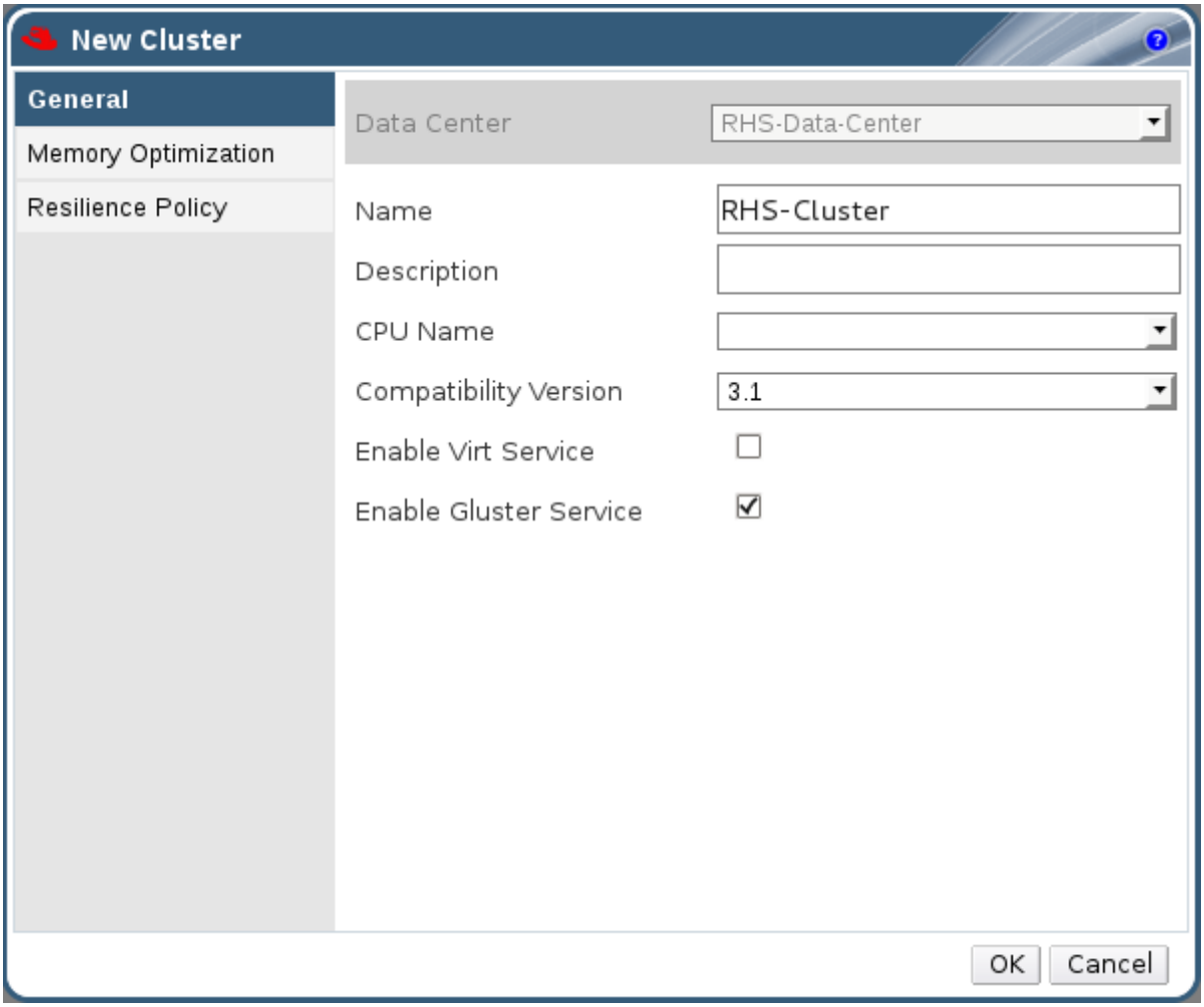

Figure 4.2. Create a Cluster

Select the **CPU Name** and **Compatibility Version** from the drop-down menus.

Click **OK**

3. Add Hosts.

Note

You must first add a Red Hat Storage server to the cluster only then you can add multiple servers to the cluster. Adding multiple servers first will display an error message.

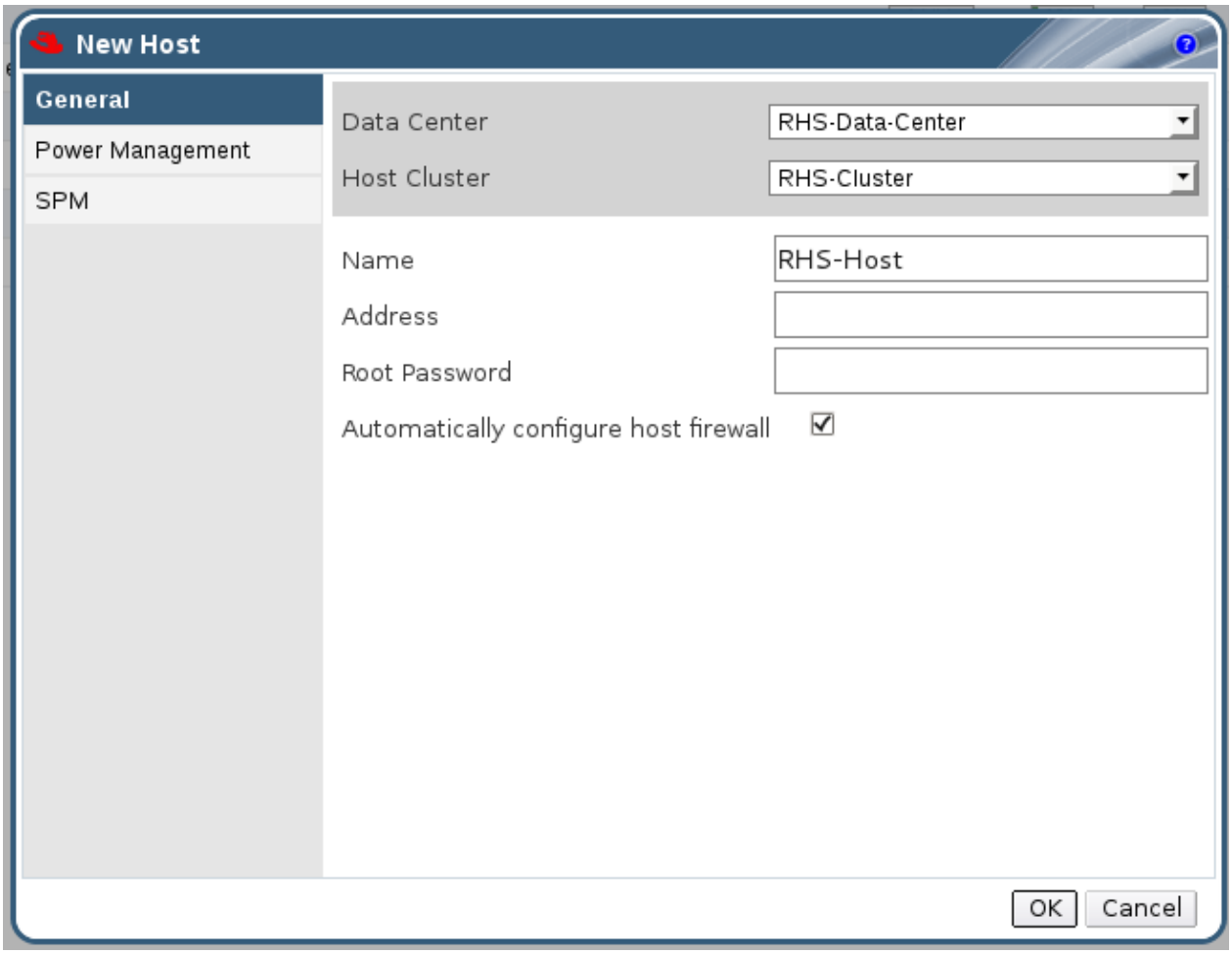

Figure 4.3. New Host window

4. Use the drop-down menus to select the **Data Center** and **Host Cluster** for the new host.
5. Click **OK**.

   The new host displays in the list of hosts with a status of **Installing**. Once installation is complete, the status will update to **Reboot**. The host is activated and the status changes to **Up** automatically after **Reboot**.

   Click **Volumes** node from the left tree of the console window.
6. Click **Create Volume** to open the Create Volume window.

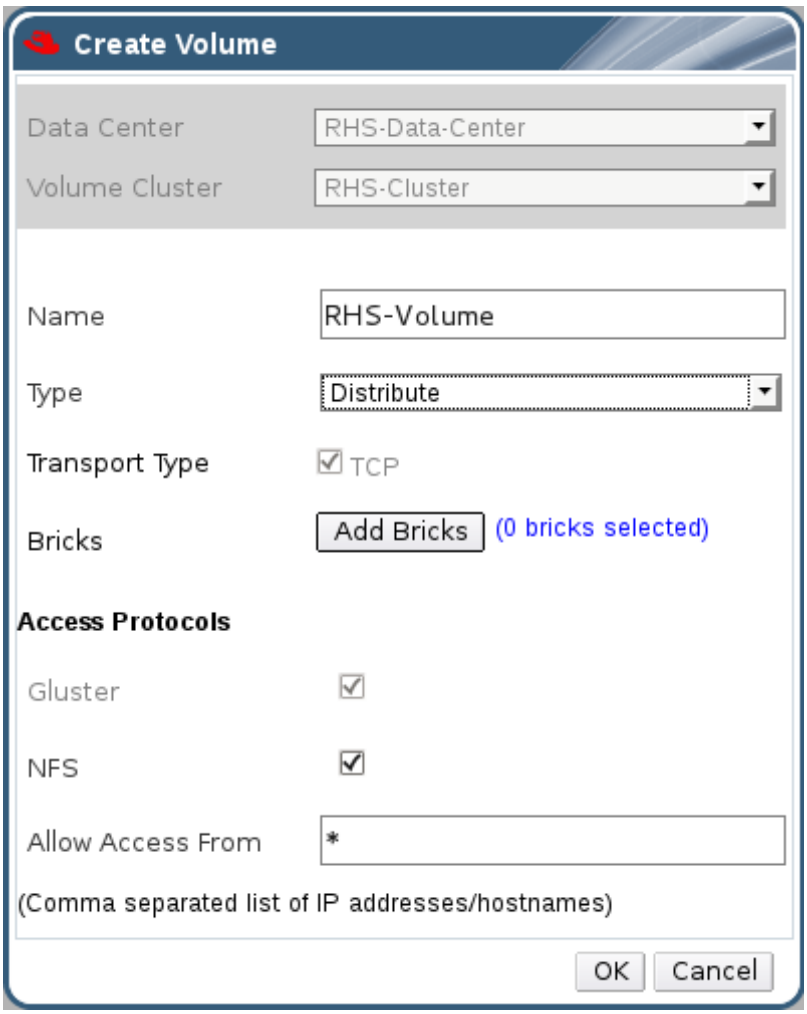

Figure 4.4. Create Volume window

7. In the **Name** field, enter the name of the volume.
8. Select the type of the volume from the **Type** drop-down list. You can choose the volume type as either **Distribute**, **Replicate**, or **Distribute Replicate**.

   To host virtual machines, it is recommended to create a volume type as Replicate or Distributed Replicate.

Important

Stripe and **Distributed Stripe** volume types are under technology preview. Technology Preview features are not fully supported under Red Hat subscription level agreements (SLAs), may not be functionally complete, and are not intended for production use. However, these features provide early access to upcoming product innovations, enabling customers to test functionality and provide feedback during the development process. As Red Hat considers making future iterations of Technology Preview features generally available, we will provide commercially reasonable efforts to resolve any reported issues that customers experience when using these features.

9. Click **Add Bricks** to add bricks to your volume.

   Brick is the basic unit of storage, represented by an export directory on a server in the storage cluster. You can expand or shrink your cluster by adding new bricks or deleting bricks.

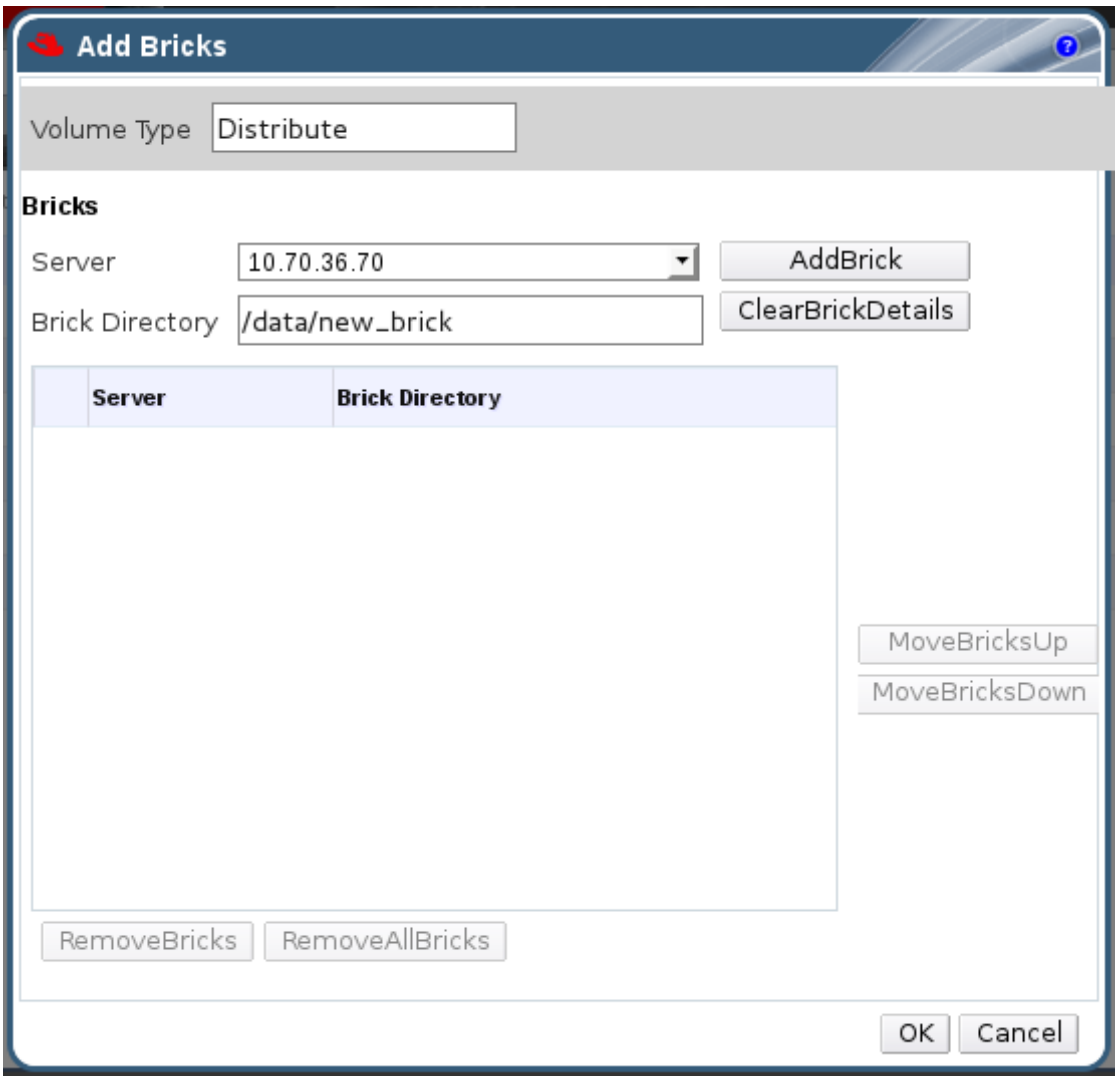

Figure 4.5. Add Bricks

Enter the brick directory path and click OK.

10. In the **Allow Access From** field, specify the volume access control as a comma-separated list of IP addresses or hostnames.

    By default, an asterisk (*) is used as a wildcard to specify ranges of addresses such as IP addresses or hostnames. You need to use IP-based authentication for Gluster and NFS exports.

11. Click **OK** to create the volume.

    The new volume is added and displays on the **Volumes** tab.

12. Select the volume that you want to tune and click **Optimize for Virt Store**.

    The volume is tuned and **group**, **storage-owner-uid**, and **storage-owner-gid** options are set.

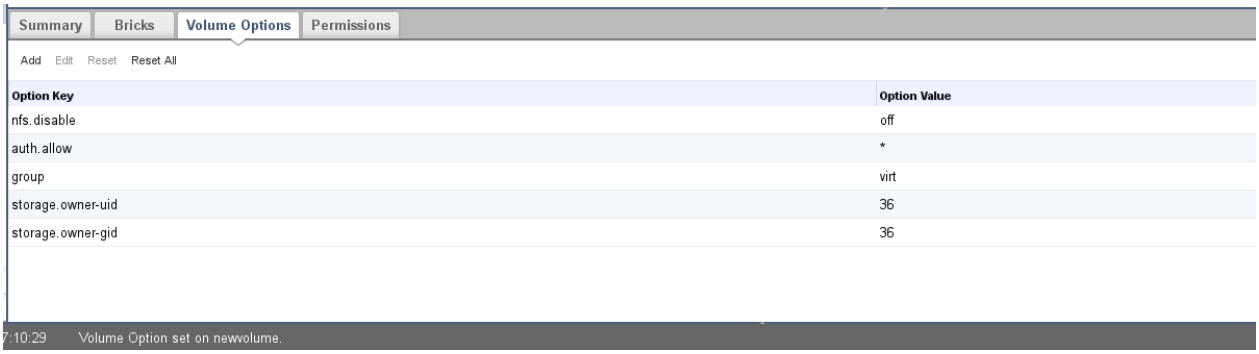

Figure 4.6. Volume Options

For more information on each **`volume set`** tunable option, refer to *Chapter 10. Managing Red Hat Storage Volumes* of *Red Hat Storage 2.0 Administration Guide*.

13. In the **`Volumes`** tab, select the new volume and click **`Start`** to start the volume.

    The volume status changes to Up.

Note

You must ensure to optimize the volume before you can attach the volume to your storage domain.

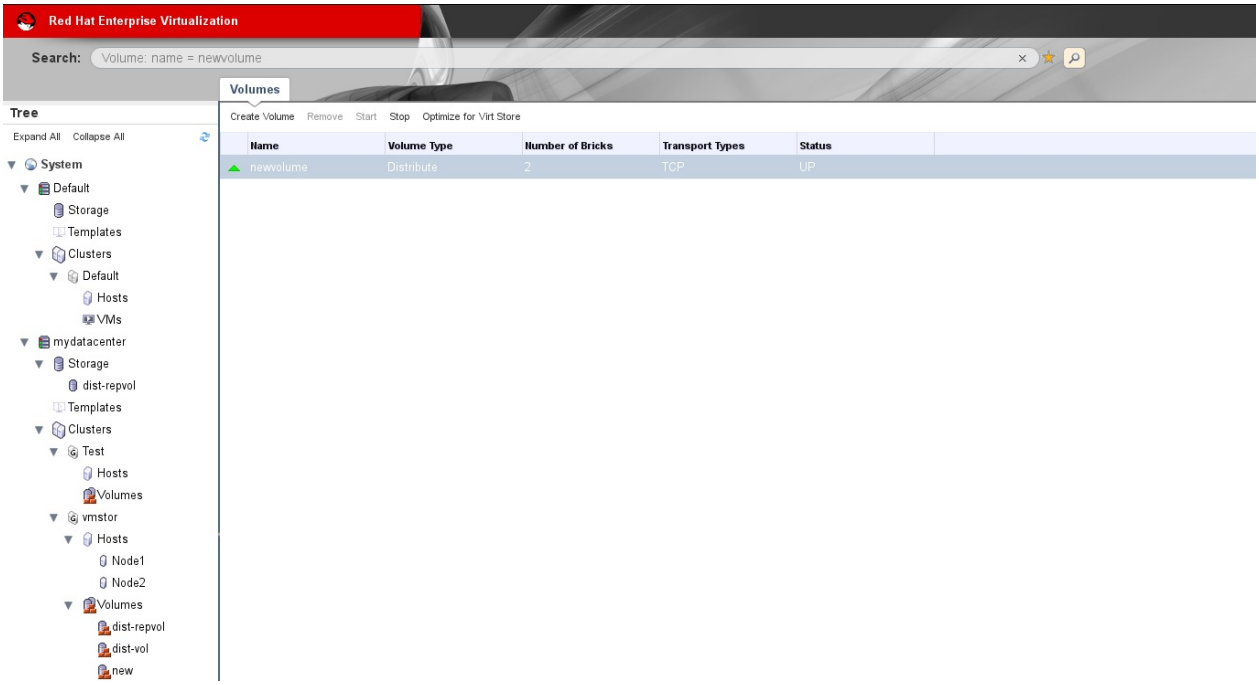

Figure 4.7. New Volume

You can create a storage domain using the optimized volume and manage it using Red Hat Enterprise Virtualization Manager. Refer to *Red Hat Storage 2.0 Console Administration Guide* for more information on managing volumes such as start, stop, expand, shrink, add and edit volume options.

Revision History

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Rebuild with publican 4.0.0

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Initial creation of this book for Beta